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Reply to Office Action of November 17, 2004

### REMARKS

With this amendment claims 1-29 and 33-36 remain are pending. Claims 1, 4, 14, 15, 20, 22, 34 and 35 have been amended. Support for the amendments is found in the instant specification *inter alia* at page 7, lines 27-28; and page 9, lines 19-20. As such, it is submitted that no new matter has been added by way of this amendment.

Claims 1-12, 14, 16-29 and 33-36 currently stand rejected under 35 U.S.C. §103(a) as being unpatentable over Marukawa et al. (U.S. Patent 5,627,090) in view of Shinji Matsui (IEEE Vol. 85, No. 4, April 1997). Lastly, claims 13 and 15 stand rejected under 35 U.S.C. §103(a) over Marukawa et al. in view of Shinji Matsui and further in view of Hoechst AG (1999 Derwent Information 1976-32210X).

Applicant requests reconsideration of the outstanding rejections in light of the above claim amendments.

Independent claim 1 has been amended to recite with greater specificity the process by which inventive organic molecule single layers (synonomously known as monolayers) are successively built up on a parent structure to form a deposition mask. Contrary to the prior art of record, the inventive organic molecule layer absorbs preferentially on a parent structure as compared to a substrate to form a self-assembled monolayer. Successive organic molecule layers are added with intermediate application of a metal ion solution.

Marukawa is cited as overlaying a parent structure with resists (5) and (6) having a metal ion coordinating portion adsorbing on the parent structure. (See Paper No. 111404, page 2, last paragraph). Marukawa is cited as failing to teach the application of a metal ion solution to the organic molecule layered parent structure. Matsui is cited to bolster the teaching of Marukawa by teaching the application of "a metal ion solution (Au) to the organic molecule

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layered parent structure to attach the metal ion to the metal ion coordinating portion of the organic molecule (PMMA) and forming an organic molecule layer attached to the metal ion (pages 630-631)." (Paper No. 111404, page 7, first paragraph).

Applicant submits that the prior art combination fails to afford the claimed invention. Marukawa is silent as to the nature of the resist (detailed with respect to numerals 5, 6, 23 and 28) that is equated to the claimed "organic molecule monolayer contacting the parent structure." Applicant respectfully submits that the lack of teaching in Marukawa cannot be interpreted to include the claimed subject matter. However, based on the reference to photolithographic techniques found in Marukawa (see for example column 8, lines 1-3), Applicant submits that one skilled in the art would recognize this to be a typical spin on polymeric photoresist that after light exposure through a mask and development leaves a portion of the substrate exposed for material deposition. Applicant further submits that such resists are polymeric in nature; as such, there is no mechanism to depositing only a single of such resist material as required in the pending claims.

Matsui is submitted to fail in bolstering Marukawa in that: (a) only electron beam resists (polymethylmethacrylate (PMMA) and 30 nanometer thick CALIXARENE) are taught are organics, and (b) no metal ion solutions are used therein. Matsui teaches spin coating of polymeric resists followed by electron beam pattern formation and metal deposition. The PMMA is polymeric and applied to 30 nanometer thickness (see page 630, right column) and fails to satisfy claim limitations as to an "organic single layer". Likewise, CALIXARENE has a molecular weight of 972 and a 1 nanometer diameter (see page 631, right column) and is coated to a thickness of 30 nanometers. Therefore, Applicant submits that Marukawa alone or in combination with Matsui fails to satisfy the claim limitations exemplified in the pending

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independent claim 1 of “overlaying a parent structure selectively deposited on a substrate with a plurality of organic molecules, each of said plurality having a metal ion coordinating portion adsorbing on the parent structure in preference to the substrate to form a deposit consisting of an organic molecule single layer contacting the parent structure.” On this basis alone, the pending claims are submitted to be nonobvious over the prior art.

Additionally, Matsui is cited as teaching application of a gold ion solution and citing to pages 630-631. Applicant cannot find such a teaching in Matsui and the lack of a teaching cannot be inferred to render pending claims as obvious. Instead, Applicant notes on page 631, left column, that “Au-Pd metal was deposited.” It is respectfully submitted that no solution application is taught and further, that one skilled in the art would recognize Au-Pd as a metal source most commonly associated with a plasma sputter electrode. Matsui notes that Au-Pd was applied to a thickness of 3 nanometers, consistent with a direct deposition technique. Additional support for Applicant’s position is found in the fact that if Matsui was for argument’s sake applying a  $\text{Au}^{3+}$  ion solution then a reduction step would be required subsequently to convert  $\text{Au}^{3+}$  to  $\text{Au}^0$ , and to remove the anion associated with the gold ions. No such steps are taught in Matsui.

If the Examiner decides to maintain the rejection, a citation with greater specificity as to where Matsui teaches applying a gold ion solution would be greatly appreciated. Thus, the prior art combination of Murakawa and Matsui also fails to teach or contemplate applying a metal ion solution to the organic molecule monolayer contacting the parent structure or subsequently attaching another monolayer via the metal ion, as required by independent claim 1. Additional limitations detailed in pending dependent claims are also not found in the prior art combination.

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In light of the above claim amendments, reconsideration and withdrawal of the rejection as to claims 1-12, 14, 16-29 and 33-36 under 35 U.S.C. §103(a) over Marukawa et al. in view of Matsui is solicited.


As claims 13 and 15 depend from a base claim now believed to be in allowable form, these claims are likewise believed to be in allowable form. In addition, based on the teaching of Marukawa et al., it is Applicant's position that one skilled in the art would lack a motivation to adopt a metal ion- organic coordinated multilayer structure.

In light of the above amendments and remarks, reconsideration and withdrawal of the rejection as to claims 13 and 15 under 35 U.S.C. §103(a) over Marukawa et al. in view of Matsui and further in view of Hoechst is respectfully requested.

Summary

Claims 1-29 and 33-36 are the claims pending in this application. Entry of this amendment is solicited. Each claim is believed to be in proper form and directed to allowable and patentable subject matter. Reconsideration and allowance of the claims is solicited. Should the Examiner find to the contrary, he is respectfully requested to contact the undersigned attorney in charge of this application to resolve any remaining issues.

Respectfully submitted,



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**CERTIFICATE UNDER 37 CFR 1.8(a)**

I hereby certify that this correspondence is being sent to the United States Patent Office  
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